intuitive | effortless | precise

mindray
NORTH AMERICA
Introducing the A5 anesthesia system

A5 features:

• Volume Control Ventilation (VCV) and Pressure Control Ventilation (PCV) with volume guarantee

• Pressure Support (PS) ventilation

• Synchronized Intermittent Mandatory Ventilation in volume or pressure modes (SIMV-VC and SIMV-PC)

• Manual/spontaneous breathing mode with respiratory monitoring capability

• Optional integrated gas analysis provides dual agent auto identification, age-based MAC values and Capnography

• 15" touch-screen user interface

• Warmed to body temperature, Breathing System that virtually eliminates internal condensation

• Central brake and built in caster guard design clears away cables and hoses

• Single container absorber reduces compressible volume and accepts non-proprietary prepackaged and loose fill absorbent. Self sealing design accommodates canister replacement at any time

• High-pressure O₂ port supports jet ventilators

• Spirometry loops

• Integrated backup screen control touchpad

• Deck lighting with adjustable brightness

• Robust safety concept with 2 hour battery back up and the ability to deliver all fresh gas and vaporized agent to the patient, regardless of power state

• Unique Auxiliary O₂ /Air cannula allows the blending of air into the nasal cannula to potentially reduce the risk of surgical fire

• Gas monitoring available in automatic, manual and standby ventilation modes
### Performance Specifications

#### Physical Specifications (Nominal)

**Dimensions**
- Height/Width/Depth: 140 cm/105 cm/80.5 cm
- Weight (without vaporizers and gas cylinders): 160 kg

**Top Shelf**
- Weight Limit: 40 kg
- Width/Depth: 61.6 cm/36.2 cm

**Work Surface**
- Width/Depth/Height: 61.6 cm/38 cm/85 cm
- Drawers (3 same size): Height/Width/Depth: 13.5 cm/44 cm/38.5 cm

**Casters (Dual Wheel)**
- Diameter: 15 cm
- Cable/Hose Guards: Built-in
- Central Brake: Controls all 4 casters

**Mounting Rails**
- GX Compatible: 5 rails total

#### Pneumatic Specifications

**Pipeline Gas Supply Requirements**
- O₂: 280 – 600 kPa (40 psi – 87 psi)
- N₂O: 280 – 600 kPa (40 psi – 87 psi)
- Air: 280 – 600 kPa (40 psi – 87 psi)

**Pipeline Gas Supply Connectors**
- Diameter indexed (DISS) threaded body as per CGA V-5

**Cylinder Gas Supply Requirements**
- Compatibility E-Cylinder (O₂, N₂O, Air)
- Cylinder Gas Supply Connectors:
  - Pin indexed (PISS) per CGA V-1

**Fresh Gas Delivery System**

**Virtual Fresh Gas Flow Tubes**
- Electronic Display Range (O₂, AIR, N₂O):
  - High Scale: 0 – 15 L/min
  - Low Scale: 0 – 1 L/min

**Humoxic Guard System and O₂ Controls**
- Provides a minimum of 21% concentration of oxygen in fresh gas in any O₂/N₂O mixture
- Automatic N₂O cutoff when O₂ pressure falls below approximately 200 kPa (32 psi)
- O₂ flush flow rate: 35 – 50 L/min
- Anesthetic Gas Scavenging System (AGSS):
  - Flow Rate: 25-50 L/min
  - Breathing System to AGSS connector: 30mm OD

**Vaporizer Attachment**
- Connection Style: Selectatec*
- Number (max): 2

**Auxiliary O₂/Air Mixer**
- Total Flow Rate (max): 30 L/min at 60% O₂
- O₂ Concentration Range: 21% – 100%

#### Breathing System

**Temperature**
- Maintained to: 31 – 40°C (88°F – 104°F)
- CO₂ Absorbent: 1 loose fill or 1 Pre-Pak (1500ml/2x1000mL)

**APL Valve**
- 330° rotation, 5 – 75 cmH₂O

#### Ventilator Operating Specifications

**Ventilator Function**
- Ventilation and manual assist

**Adult, Child, Small Child Patient Setting Modes**
- VCV, SIMV-VC, PCV (+VG), SIMV-PC, PS

**Automatic Compensation**
- Fresh Gas Compensation: Automatic after start up sequence

**Ventilator Display**
- Color LCD with touch screen
- Screen Size: 15 in diagonal (4:3 ratio)
- Sweep Speed: 15 seconds
- Graphic Waveforms: Airway Pressure and Flow
- Numeric Data: Tidal Volume, Minute Volume, Peak airway pressure, PEEP, Mean or Plateau pressure, Breath Rate, FIO₂

**Spirometry Loops**
- Pressure vs Volume, Flow vs Volume

**Tidal Volume**
- Deliverable Range: 20 – 1500 mL (VCV)
- Accuracy: ±60mL ±10mL, ±60mL and ±210mL ±15mL, ±210mL ±7% of the set Value

**Minute Volume**
- Display Range: 0 – 100 L

**Pressure Range**
- Manual Mode: 0 – 75 cmH₂O
- Pressure Control Ventilation: 5 – 70 cmH₂O
- Pressure Accuracy (PCV, PS, SIMV/PC):
  - Max. of ±2.5 cmH₂O or ±10%
- Minute Volume Display Range: 0 – 100 L
- Breath Rate Range (per minute):
  - Deliverable Range: 4 – 100 bpm
  - Display Range: 0 – 120 bpm
- I:E Ratio: 4:1 – 1:8

**End Inspiratory Plateau Range**
- OFF, 5 – 60% (of inspiratory time)

**Positive End Expiratory Pressure (PEEP)**
- Type: Electronically controlled
- Range: 3 – 30 cmH₂O
- Accuracy: ±2 cmH₂O or ±10%
- FIO₂ Sensor Type: Galvanic Fuel Cell
- Display Range: 18 – 100%
- Resolution: 1 vol/vol%

**Alarms**
- Minute Volume
  - Low Limit Range: 0 – 20 L/min
  - High Limit Range: 0.2 – 25 L/min
- Airway Pressure
  - Low Limit Range: 0 – 70 cmH₂O
  - High Limit Range: 10 – 100 cmH₂O
- FIO₂
  - Low Limit Range: 18 – 98 vol/vol%
  - High Limit Range: 21 – 100 vol/vol%

**Apnea – Automatic Mode**
- When Paw < (PEEP + 3 cmH₂O) and V, < 10 mL for more than 30 seconds

**Apnea – Manual Mode**
- > 120 seconds

**Respiration Rate**
- Manual Mode: > 120 seconds

**Fresh Gas Compensation**
- Automatic after start up sequence

**Hyper Capnoic Apnea**
- Automatic after start up sequence

**Compensation**
- Automatic after start up sequence

**Compensation**
- Automatic after start up sequence

**Ambient Pressure**
- 700–1200hPa

**Humidity**
- 15 – 90% RH, non-condensing

**Operating Temperature**
- +10 – +40°C (50 – 104°F)

**Humidity**
- 15 – 90% RH, non-condensing

**Power and Battery Backup**
- mains power supply: 100 – 120 VAC 50/60 Hz
- current input: 12A total max
- power consumption: Approx. 200 VA
- power cord: Line cord
- backup battery run time: Approx. 150 minutes
- charge time: 8 hours max

**Auxiliary Outlets**
- Number and Type of Outlets: Four circuit breaker (3A each)

**Environmental Specifications**
- Operating temperature: +10 – +40°C (50 – 104°F)
- Storage temperature: -20 – +60°C (-4 – 140°F)
- Humidity: 15 – 90% RH, non-condensing (operating and storage)
- Materials: All materials in contact with patient gas are free of natural latex rubber
- Specifications: Conditions defined at Ambient Temperature Pressure Dry

### Anesthesia Gases

#### Sampling Rate
- High volume AG watertrap: 120, 150, 200ml/min (user-selectable) (default: 120ml/min)
- Low volume AG watertrap: 70, 90, 120ml/min (user-selectable) (default: 70ml/min)
- Sampling delay time: <4sec
- Refresh rate: 1sec
- Warm-up time: 45sec to warm-up status
- 10min to ready-to-measure status

#### Normal Operating Conditions After Warm-up
- Ambient temperature: 10 to 55°C (50 to 131°F)
- Ambient pressure: 700–1200hPa
- Ambient humidity: 10–95% RH, non-condensing

#### Measurement Range
- CO₂/Des/Sev/Enf/Iso/Hal 0-30%
- O₂/N₂O 0-100%
- AwpR 2-100bpm
- Resolution
- CO₂ 1mmHg

#### Measurement Rise Time
- Sampling flow 120ml/min, using the DRYLINE™ water trap and neonatal DRYLINE™ 2.5mm sampling line
- CO₂/N₂O ≤250ms
- O₂ ≤600ms
- Hal/Iso/Sev/Des ≤300ms
- Enf ≤350ms
- Sampling flow 200ml/min, using the DRYLINE™ water trap and adult DRYLINE™ 2.5mm sampling line
- CO₂/N₂O ≤250ms
- O₂/N₂O ≤500ms
- Hal/Iso/Sev/Des ≤300ms
- Enf ≤350ms